

# OzoNews

A fortnightly electronic news update on ozone and climate protection and the implementation of the Montreal Protocol brought to you by OzonAction

**Volume XXIII | 15 July 2023**

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**GLOBAL**

## 1. Kigali Amendment latest ratifications

Congratulations to the latest countries which have ratified the Kigali Amendment:

[Georgia, 11 July 2023](#)

[Spain, 9 June 2023](#)

[Bahamas, 30 May 2023](#)

At the Twenty-Eighth Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer, held in Kigali from 10 to 15 October 2016, the Parties adopted, in accordance with the procedure laid down in paragraph 4 of article 9 of the 1985 Vienna Convention for the Protection of the Ozone Layer, a further amendment to the Montreal Protocol as set out in Annex I to the report of the Twenty-Eighth Meeting of the Parties (Decision XXVIII/1).

Kigali Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, Status of Ratification 15 October 2016 to [date](#).

[United Nations Treaty Collection](#)

Image: [UN Treaty Collection website](#)



## 2. Summary of the 45<sup>th</sup> meeting of the Open-ended Working Group of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer: 2-7 July 2023

Science has been the bedrock of the Montreal Protocol on Substances that Deplete the Ozone Layer, the cornerstone of its success. From its inception, non-negotiated scientific assessments have informed decision-making that has helped to heal the Earth's ozone layer. Widely recognized as the most successful multilateral environmental agreement in the world, the Protocol has still faced recent challenges to its effective implementation.

At the 45<sup>th</sup> Meeting of Open-ended Working Group of the Parties to the Montreal Protocol (OWG 45), delegates delved into the quadrennial reports prepared by the Scientific Assessment Panel (SAP), the Environmental Effects Assessment Panel (EEAP) and the Technology and Economic Assessment Panel (TEAP). These reports informed delegates of findings related to the twin challenges of ozone depletion and climate change, and grounded delegates' discussions on a number of issues of concern, including:

- illegal import/export of obsolete equipment;



- stratospheric aerosol injection, a proposed geoengineered solution for solar radiation management;
- adjustments to the freeze and phase-down levels established by the Protocol and its Kigali Amendment;
- emissions of hydrofluorocarbon (HFC)-23;
- gaps in the global coverage of atmospheric monitoring of controlled substances; and
- very short-lived substances with ozone depleting potential.

Replenishment Task Force (RTF) on the replenishment of the Multilateral Fund (MLF) for the triennium 2024-2026. The report estimates the replenishment need at approximately USD 1 billion, which would be the highest level ever. Delegates requested the Task Force to prepare a supplementary report addressing a list of elements for additional analysis. This report, along with a number of proposals, will be considered at the 35<sup>th</sup> Meeting of the Parties (MOP 35), which is scheduled to take place at the seat of the Secretariat in Nairobi, Kenya, in October 2023.

OWEG 45 convened in Bangkok, Thailand, from 3-7 July 2023, with over 400 registered participants. The meeting was preceded by a one-day workshop on strengthening the effective implementation and enforcement of the Montreal Protocol, which took place on Sunday, 2 July 2023. At the workshop, participants shared their experiences on addressing illegal trade in controlled substances and had an open discussion about informal versus mandatory prior informed consent for the transboundary movement of controlled substances.

Read/Download the full [Summary Report](#)

[IISD, Earth Negotiations Bulletin, Vol. 19, No. 164, 10 July 2023](#)

*Image: IISD- ENB website*

**See also >>>**

- [IISD daily reporting/highlights](#)

- [UNEP Ozone Secretariat/OEWG-45](#)

### 3. Considerations for establishing national HFC Quota System

#### Overview

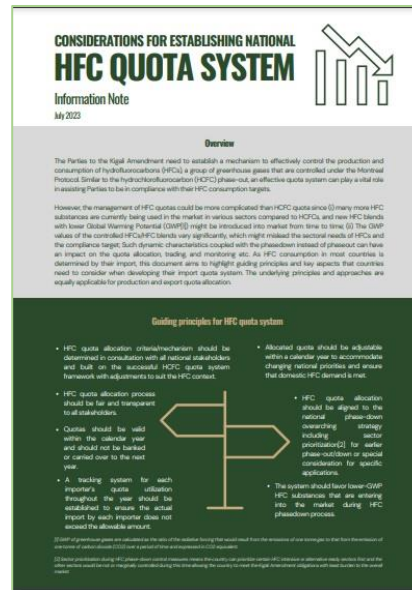
The Parties to the Kigali Amendment need to establish a mechanism to effectively control the production and consumption of hydrofluorocarbons (HFCs), a group of greenhouse gases that are controlled under the Montreal Protocol. Similar to the hydrochlorofluorocarbon (HCFC) phase-out, an effective quota system can play a vital role in assisting Parties to be in compliance with their HFC consumption targets.

However, the management of HFC quotas could be more complicated than HCFC quota since (i) many more HFC substances are currently being used in the market in various sectors compared to HCFCs, and new HFC blends with lower Global Warming Potential (GWP<sup>[1]</sup>) might be introduced into market from time to time; (ii) The GWP values of the controlled HFCs/HFC blends vary significantly, which might mislead the sectoral needs of HFCs and the compliance target; Such dynamic characteristics coupled with the phasedown instead of phaseout can have an impact on the quota allocation, trading, and monitoring etc. As HFC consumption in most countries is determined by their import, this document aims to highlight guiding principles and key aspects that countries need to consider when developing their import quota system. The underlying principles and approaches are equally applicable for production and export quota allocation.

Read/download the [full document](#)

[United Nations Environment Programme, OzonAction, Compliance Assistance Programme Asia and the Pacific Office, July 2023](#)

Image: UN Environment, OzonAction Compliance Assistance Programme ROAP

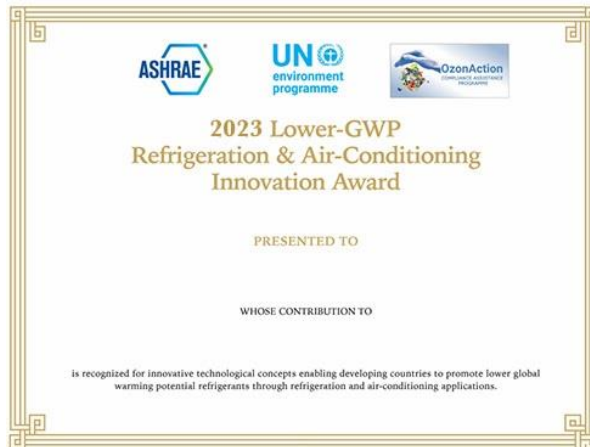


#### 4. ASHRAE and UNEP Announce Lower GWP Award Selections

ATLANTA (July 11, 2022)

– ASHRAE and UN Environment Programme (UNEP) have announced the project selections for the [2023 ASHRAE-UNEP OzonAction Lower-GWP Refrigeration and Air-Conditioning Innovation Awards](#).

The annual international award program promotes innovative design, research, and practice by recognizing people who have developed or implemented innovative technological concepts applied in developing countries to promote lower global warming potential (GWP) refrigerants through refrigeration and air-conditioning applications.



“The projects selected represent long-term, global and energy-efficient solutions to lessen the impact of ozone-depleting substances,” said 2023-24 ASHRAE President and co-chair of the judging committee Ginger Scoggins, P.E., Fellow ASHRAE. “We congratulate the selected project teams and look forward to witnessing their innovative concepts set a benchmark for sustainability in developing countries.”

The projects in each category were selected based on delivering innovative solutions to meet refrigeration and air-conditioning needs by using lower-GWP technologies. The selection criteria included:

- Extent of need.
- Innovative aspects in transforming conventional practices.
- Technical replicability to developing countries.

Judges also accounted for economic feasibility when possible, considering that growing acceptance of new technologies will favorably influence cost and availability.

“We are living at a watershed moment under the Montreal Protocol when developing countries must find long-term solutions to replace HCFC refrigerants while simultaneously minimizing climate impacts,” said James S. Curlin, Head of UNEP OzonAction and co-chair of the judging committee. “It is vital to empower the research community to identify new approaches and alternative refrigerants that work for those countries. UNEP OzonAction is proud to join with ASHRAE to recognize these winners who are proposing approaches that address the ozone, climate, and energy dimensions.”

Four projects were selected, all in the Commercial/Industrial Applications category:

- *HC-290 (Propane) as an Alternative Refrigerant in Commercial Applications (Ecuador)*

Project Team: *Rodrigo Serpa, Fernando Del Castillo, Omarly Acevedo, and Ana Correa*

This cold store project used HC-290 as an alternative refrigerant in commercial applications. The project resulted in a 36% reduction in energy consumption and a 41% decrease in total equivalent CO<sub>2</sub> emissions. It also provided input for updating regulations on flammable refrigerants. A part of the project was to perform a flammability risk assessment following the refrigeration safety standard (EN-378) and the explosive atmospheres standard (EN-1127-1) to identify possible sources of ignition and then to implement actions to eliminate them including HC-290 sensors inside the room.

- *Flammable Refrigerant Use in a Draft Beer Machine (Brazil)*

Project Team: *Enio Pedone Bandarra Filho, Eduardo Arjona Esteves, Lucas Cavalin, David Fernando Marcucci Pico, Davi Telles, and Roberto Cavalin*

This project developed a new heat exchanger composition for draft beer machines, allowing the use of flammable refrigerants and improving cooling efficiency. The new design reduces the refrigerant charge, eliminates oil accumulation issues, and enhances heat exchange between fluids and the intermediate material. The project demonstrated the environmental benefits by achieving lower energy consumption and CO<sub>2</sub> emissions, while maintaining the size and usability of the equipment.

- *Ammonia Use in Multipurpose Cold Storage (India)*

Project Team: *Harshal Surange and Arvind Surange*

The project is a multipurpose cold storage utilizing a low-charge DX ammonia system with air-cooled condensers and electronic expansion valves, a first of its kind in India. By using ammonia as a refrigerant, which has a low Global Warming Potential (GWP) and zero Ozone Depletion Potential (ODP), the project has a positive environmental impact while reducing water consumption and energy consumption through the use of adiabatic pre-cooling systems. Three main features are innovative:

1. An air-cooled condenser is considered with adiabatic cooling that starts when the ambient temperature exceeds 32 C. This avoids high condensing pressures for ammonia.
2. Ability to convert storage chambers based on market demand to low or positive temperatures without increasing energy cost.
3. A dry cooler with adiabatic pre-cooling of condenser inlet air is used for this compressor jacket cooling avoiding excessive use of water and keeping the compressor jacket corrosion free.

- *Propane Chiller Use in a Convenience Store (Brazil)*

Project Team: *Fernando Sayols Marchioro, Éder Paluch, and Elielton Polityto*

The project involves the development of a modular low-charge refrigerant chiller using propane as an HCFC replacement in commercial facilities in Brazil. The innovation includes:

- A centralized control system.
- Capacity control by mass flow variation.
- The use of low internal volume evaporators and condensers to minimize refrigerant charge.

The modular system allows for easy replacement of faulty equipment and eliminates the need for maintenance in the field. The benefits of this project include optimized performance, reduced environmental impact through natural refrigerants, and potential future retrofit opportunities in developing countries. The adoption of the concept of a control and pumping unit separate from the cooling modules enhanced safety, since all the electrical power and control parts were separated from the propane circulation environment, thus avoiding possible generation problems.

The judges who reviewed the entries were Nesreen Ghaddar (Lebanon), Cesar Lim (Philippines), Roberto Peixoto (Brazil) and James Wolf (United States).

The selected projects were announced at the 2023 ASHRAE Annual Conference in Tampa, Fla. Selected project teams will be recognized with the awarding of certificates at UNEP events held in the regions or countries of the projects.

For more details on the awarded projects and other ASHRAE-UNEP OzonAction activities, visit [ashrae.org/ashrae-unep-portal](https://ashrae.org/ashrae-unep-portal)

[UN Environment, OzonAction, 6 July 2023](#)

*Image: OzonAction*



### **5. Refrigerant Driving License supports alternative refrigerant transition through workforce qualification**

**Bangkok, Thailand, 4 July 2023** – Refrigerant Driving License (RDL), a global qualification program for refrigeration and air-conditioning (RAC) technicians, was unveiled at the [45<sup>th</sup> meeting of the Open-ended Working Group of the Parties to the Montreal Protocol](#) in Bangkok. [UNEP OzonAction](#)

and the Air Conditioning, Heating, Refrigeration Institute (AHRI) are leading the initiative, in collaboration with the European Association of Refrigeration, Air Conditioning and Heat Pump Contractors (AREA).

During the side event, 109 representatives (48 female/61 male) of National Ozone Units, NGOs, industry representatives and other meeting participants learned about the benefits

of the RDL, its online and hands-on testing components, and how National Ozone Units can implement the RDL programme in their countries.

High global warming potential (GWP) hydrofluorocarbons (HFCs), potent greenhouse gases widely used by the RAC industry, are being phased down and replaced by low-GWP alternative refrigerants, guided by the Kigali Amendment of the Montreal Protocol.

Due to the flammability of some low-GWP alternative refrigerants and their increasing use, safe refrigerant management is needed more than ever to minimize risk.

RDL is a globally recognized and accepted qualification programme that sets minimum competencies and skills to assess technicians on proper and safe handling and management of refrigerants.

Global acceptance is one of the key benefits of the RDL. The programme is supported by eleven key industries and professional associations from around the world (see box).

RDL Advisory Committee

- Air Conditioning, Heating, Refrigeration Institute (AHRI)
- European Association of Refrigeration, Air Conditioning and Heat Pump Contractors (AREA)
- American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE)
- Associação Brasileira de Refrigeração, Ar Condicionado, Ventilação e Aquecimento (ABRAVA)
- Asociación Colombiana de Acondicionamiento del Aire y de la Refrigeración (ACAIRE)
- European Partnership for Energy and the Environment (EPEE)
- Japan Refrigeration and Air Conditioning Industry Association (JRAIA)
- Korea Refrigeration and Air-conditioning Industry Association (KRAIA)
- Refrigerants Australia
- The Alliance for Responsible Atmospheric Policy (ARAP)
- Union of Associations of African Actors in Refrigeration and air-Conditioning (U-3ARC)

The RDL programme not only supports local practitioners to assess and validate their skills and best practices in identifying, handling, charging, recovery and recycling, leak testing, storing, record-keeping, and circuit maintenance, but it also responds to the needs of Article 5 countries for a safe and environmentally responsible transition to the next generation of refrigerants.

The key takeaways from the side event for National Ozone Units included how to effectively implement the RDL programme in their countries. The session highlighted the online theoretical examination and hands-on practical skills assessment of servicing technicians as one of the critical components of the RDL program, as well as lessons learnt from successful pilots in Grenada, the Maldives, Rwanda, Sri Lanka, Suriname, and Trinidad & Tobago.

One observation from RDL pilots conducted in Grenada and Maldives was that technicians considered passing the RDL as a validation of their knowledge. Miruza Mohamed, Director, Environment Management and Conservation of the Maldives said technicians from her country considered the RDL an opportunity for technicians to have their competencies internationally recognized. The fact that a global array of associations were supporters made the technicians eager to participate, noted Leslie Smith, Head of the National Ozone Unit of Grenada.





Regarding the need for programmes like RDL, Jim Curlin, Head of UNEP OzonAction noted “In the world of flammable refrigerants, ideally every single technician should be trained on best and safe practices, and each one of those who have been trained should be confirmed to have acquired the knowledge through a certification process” He added, “A technician qualification program is the best way to minimize risks for the public, the private sector, the government, and the Montreal Protocol. We found it also has many positive side benefits, including both the professionalization of the RAC workforce and its alignment with international qualifications.”

National Ozone Units or others interested in learning more about the RDL programme are invited to contact their respective UNEP Regional CAP teams or the contact listed below.

[UN Environment, OzonAction, 4 July 2023](#)

*Image: OzonAction website*

## 6. Setting the Stage for Climate Action Under the Montreal Protocol

The successful ozone protection treaty evolved thanks to a dozen distinguished studies.

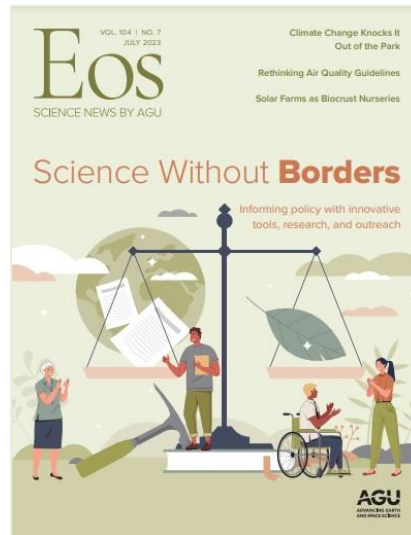
### [...] Twelve Papers That Justified Phasing Down HFCs

In consultation with scientists and other colleagues, we set out to identify core scientific papers published either during deliberations for the 2007 adjustment that accelerated the phaseout of HCFCs or for the 2016 Kigali Amendment. The purpose was to recognize those who worked to understand the contributions of CFCs, HCFCs, and HFCs to climate change and to inform policymakers and the public. Demonstrating the important contribution of published scientific research to groundbreaking environmental policy may help inspire and motivate others to publish their own research and make it available to decision makers.

Although many quality studies have quantified and assessed the climate impacts of HFCs, here we highlight studies that were particularly influential in accelerating the HCFC phasedown and HFC phasedown. Specifically, we evaluated papers based on whether they were crafted to inform Montreal Protocol and other government policymakers; focused on quantifying the potential effects of HFC reductions on climate forcing (i.e., in equivalent CO<sub>2</sub> emissions); and written by authors, contributors, or reviewers of the 2014 and 2018 reports of the Montreal Protocol Scientific Assessment Panel (SAP), an advisory group composed of hundreds of international experts who periodically evaluate atmospheric ozone conditions and related issues.

From our evaluation, we identified 12 papers (see sidebar on p. 34) that formed the scientific foundation for the Montreal Protocol parties to take bold steps to phase down HFCs via the Kigali Amendment. These thoroughly researched and clearly presented scientific papers, which were among those contributing to SAP presentations at Meetings of the Parties and were directly read and considered by treaty negotiators from party countries, made the link between HFCs and climate change apparent and persuaded skeptics and stakeholders to take action. All told, the authors of these dozen papers include about 40 scientists from 10 countries, reflecting the substantial degree of international attention to the problems posed by HFCs and scientific collaboration to address them.

Other scholars of the Montreal Protocol may have different opinions about which studies were most significant in informing the Kigali Amendment or about what criteria should be applied in evaluating studies. We welcome such differences of opinion because they will spur discussions that help trace the evolution of scientific understanding and its links to policy resolve in this case—and perhaps offer useful insights in future cases.



Following their groundbreaking 2007 study showing the benefits to climate change mitigation of ODS drawdowns, Velders and the same group of colleagues published another prominent study in 2009. In it, they find that regulatory controls on ozone-safe HFC greenhouse gases could significantly reduce anthropogenic climate forcing even as CO<sub>2</sub> reductions are aggressively pursued for long-term success [Velders et al., 2009]. For example, in a scenario in which HFC consumption levels are frozen and then gradually drawn down from 2013 to 2050, the global warming potential would be reduced by the equivalent of 106–171 gigatons of CO<sub>2</sub>, and global radiative forcing would be reduced by 0.18–0.30 watt per square meter by 2050. This paper started the debate among Montreal Protocol parties that culminated in the 2016 Kigali Amendment.

Subsequently, more papers validated, extended, and enhanced these 2009 findings and were incorporated into Montreal Protocol SAP reports. We have identified 10 papers in addition to Velders et al. [2007, 2009] that provided primary warnings about hazards to environmental and human health from HFCs, clear elaboration of the emerging problem, and guidance about what must be done—and how fast—to avoid existential threats and catastrophic consequences.

For example, Montzka et al. [2015] reported that global atmospheric measurements of HFCs from 2007 to 2012 were consistent with modeled projections by Velders et al. [2009] but were twice as large as the amount of HFC emissions reported to the UN Framework Convention on Climate Change, likely reflecting the rapid growth in the use of these chemicals as substitutes for HCFCs, which were being phased out under the Montreal Protocol.

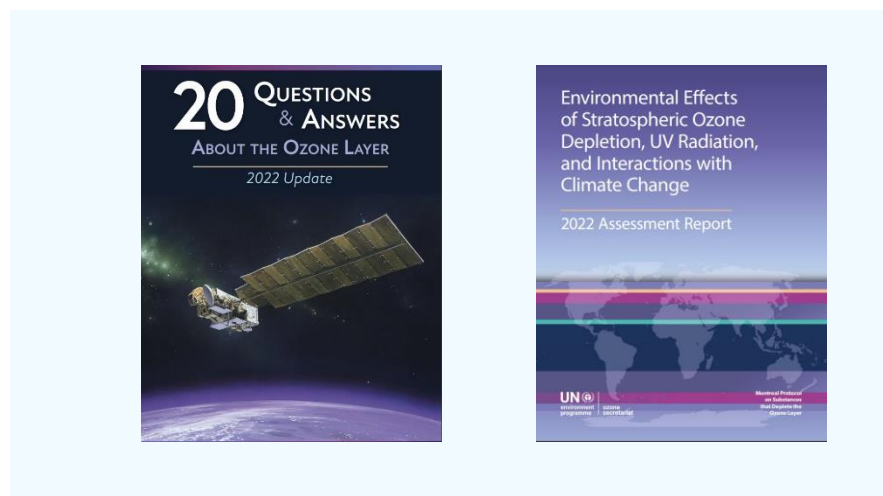
Earlier, Solomon et al. [2010] illustrated the complexity of atmospheric processes and showed how warming effects can extend beyond the time needed for greenhouse gases to degrade. These authors emphasized the need to act quickly to prevent long-lasting and heat-amplifying impacts, such as the transfer of heat to the oceans.

Turning Beneficial Science into Beneficial Policy Science often informs major, environmentally beneficial policy shifts—think of the research that initiated efforts to draw down the use of hazardous pesticides or lead in gasoline—but rarely does it do so as rapidly as it did in the case of the Kigali Amendment. As we face many other ongoing Earth system and global health challenges, persuasive science will continue to be necessary to build the confidence of policymakers to act according to the precautionary principle, which requires action to avoid possibly irreversible effects long before all the scientific details of an issue are certain [Willi et al., 2021].

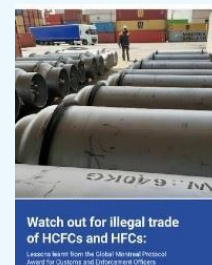
The overarching lesson from the Kigali Amendment is that research, analysis, and publication by scientists focusing on current and emerging environmental threats are essential to successful and timely policy action to address them. As Sherwood Rowland said at a White House climate change roundtable in 1997, paraphrasing others before him, “If not us, who? If not now, when?” [...]

[EOS, Science news by AGU, Vol. 104 | NO. 7, July 2023, Pages 30-34](#), Authors: Stephen O. Andersen, Institute for Governance and Sustainable Development, Marco Gonzalez,

Montreal Protocol Technology and Economic Assessment Panel, and Nancy J. Sherman, Institute for Governance and Sustainable Development. Image: EOS



**Watch out for Illegal Trade of HCFCs and HFCs:** Lessons learnt from the Global Montreal Protocol Award for Customs and Enforcement Officers. This publication provides an analysis of the cases submitted in the context of the [Global Montreal Protocol Award for Customs and Enforcement Officers](#). The Global Award was launched in 2018 by UNEP OzonAction. This Global Award is intended to raise awareness about the Montreal Protocol and to recognise customs and enforcement officials for their efforts in preventing and combating illicit traffic in Montreal Protocol and Kigali Amendment-regulated substances. Ozone-depleting substances (ODS) include hydrochlorofluorocarbons (HCFCs) and other compounds with a high Global Warming Potential (GWP), particularly hydrofluorocarbons (HFCs).



**UNEP OzonAction, ASHRAE, April 2023 Fact sheet: [Update on New Refrigerants Designations and Safety Classifications](#).**

The purpose of this fact sheet is to provide an update on ASHRAE standards for refrigerants and to introduce the new refrigerants that have been awarded an «R» number over the last few years and introduced into the international market.



**[Sustainable cold chains: Virtual Exhibition](#) - The virtual exhibition for sustainable cold chains aims to highlight the critical role of cold chains in ensuring food safety and security, access to vaccines, reducing global warming and preventing ozone layer depletion.**

The exhibition showcases commercially available cold chain technologies for food and vaccines, mainly targeting applications and equipment with refrigeration and cooling cycles that use ozone and climate-friendly refrigerants and have enhanced energy efficiency characteristics. It also aims to promote game-changing and systemic approaches, relevant initiatives, and not-in-kind solutions to cold chains

These technologies and approaches directly contribute to meeting national obligations under the Montreal Protocol on Substances that Deplete the Ozone Layer including its Kigali Amendment and the Paris Agreement on Climate Change. Sustainable cold chain contributes to the achievement of many [Sustainable Development Goals](#).

The exhibition is ongoing and continuously updated with submissions accepted on a rolling basis. The partners of the exhibition will continue promoting the exhibition at all relevant events throughout 2022 and beyond.

Click [here](#) for more information / submit a nomination >>>

*Image: Sustainable cold chains website*



## Categories



1 exhibits

On site post-harvesting  
and/or precooling  
applications



6 exhibits

Storage of product, e.g.  
large warehouses /  
Distribution centers



0 exhibits

Storage on board ships,  
aircraft, and containers



4 exhibits

Food processing plants



1 exhibits

Transport (large and  
smaller trucks, smaller  
containers)



8 exhibits

Supermarkets (wholesale  
markets & Retailers)



1 exhibits

Food services  
(Restaurants, cafes,  
tourism facilities, etc)



2 exhibits

Vaccines and other  
pharmaceutical  
products



0 exhibits

Game-changing and  
systemic approaches

AFRICA

## 7. 'Refrigeration taken for granted' (Namibia)

Amalia Nangolo, an ozone officer at the Ministry of Industrialisation and Trade's national ozone unit, said that governments, end users, and the public often take the significance of cooling and refrigeration for granted.



"Apart from its main purpose of keeping food fresh and safe to eat, your refrigerator can also be an agent of change to help solve environmental challenges, such as preserving the earth's ozone layer, fighting climate change, and promoting energy efficiency.

"You may not recognise it, but the refrigerator-freezer in your house or your favorite restaurant is a superstar which has a huge impact far beyond the kitchen.

"Reduce food waste and related greenhouse gas emissions in the processing, transportation, storage, and retail display of cold food by expanding and improving access to energy-efficient low-global warming potential technology," she said.

Nangolo was speaking at an event where role-players in refrigeration observed World Refrigeration Day at Walvis Bay on 26 June.

The day is aimed at raising awareness of the importance of refrigeration technologies in everyday life.

Stakeholders were educated on ozone-depleting substances to ensure continuous progress in moving towards energy-efficient and environmentally friendly technologies.

Namibia is a party to the Montreal Protocol of 1987 on substances depleting the ozone layer.

Nangolo shared that the ministry's national ozone unit is at the forefront of the phasing out of hydrochlorofluorocarbon (HCFC) and will continue to promote environmentally friendly and energy-efficient products.

"In an effort to meet international obligations, the country has ratified the Kigali Amendment to the Montreal Protocol on substances that deplete the ozone layer. "This amendment aims to tackle climate issues caused by HCFCs. "It is not a threat to the ozone layer but has high global warming potential. Henceforth, parties to the Montreal Protocol have proactively risen to address this challenge by adopting the Kigali Amendment," she said.

Nangolo urged participants to work together towards making Namibia an example to be emulated by other countries.

Caign Manyukwa, the president of the Southern African Development Community Refrigeration and Air-Conditioner Association (SADC RAC), said the cold-chain business

has been neglected in the past, but is now spreading a regional message of “united cooling for food security and comfort”.

“Cooling has the power to change lives and preserve lives, as seen during the Covid-19 pandemic. A point to note was the storage of all vaccines.

“The SADC as a region has taken heed of the global call to implement universal Sustainable Development Goals that investigate high-energy efficiency, as well as the need to migrate from the usage of high ozone depletion potential refrigerants to natural refrigerants and some blends with low ozone depletion and global warming potential.

“Our region will be leading the way in no time as we work with our various governments and implementing partners to improve livelihoods through cooling.

“The SADC RAC Association will fully support the ‘from farm to fork’ initiative and encourage our agricultural sectors so farmers can enjoy the fruits of their labour through the full implementation of cold-chain policies that give perishables a longer shelf life,” he said.

[The Namibian, 3 July 2023, By Taati Nilenge](#)

*Image: The Namibian website - By Taati Nilenge*

## LATIN AMERICA AND CARIBBEAN

### 8. Capacitan en gestión de residuos a funcionarios, empresas y estudiantes de las Galápagos

Quito - Más de 130 personas entre funcionarios, personal de empresas, profesionales ambientales y estudiantes de las Islas Galápagos (Ecuador) recibieron capacitación sobre cómo manejar adecuadamente los desechos generados en las islas, declaradas patrimonio natural de la humanidad desde 1978.

Los talleres se desarrollaron entre el 3 y el 6 de julio en las islas de Santa Cruz e Isabela, según precisó este lunes en un comunicado el Programa Nacional de Gestión de Químicos (PNGQ), encargado de impartir las sesiones.

Los asistentes, en su mayoría técnicos del sistema de residuos de los municipios, recibieron información sobre el manejo integral de estos en las áreas de almacenamiento,





disposición y gestión final, detalló el PNGQ [...] Estos productos tienen sustancias químicas tóxicas, entre ellas metales pesados como plomo y mercurio, retardadores de llama o ablandadores de plástico, que sin una eliminación adecuada su impacto sobre el ambiente y la salud de las personas es muy nocivo.

“No sabía que los refrigerantes se podían reciclar y reutilizar”, señaló Ana Carolina Vélez, administradora de un hotel en Puerto Ayora.

Vélez relató que en su establecimiento habitualmente se recargan los aparatos de aire acondicionado con refrigerante nuevo, “lo que genera mucha contaminación, pues tenemos estos equipos en todas las habitaciones”, añadió la hostelera, que se comprometió a reevaluar el protocolo.

La consultora ambiental Diana Salazar indicó que reutilizar el gas refrigerante “reduce las emisiones de gases de efecto invernadero a la atmósfera, que son los causantes del deterioro de la capa de ozono”.

Para la experta, este tipo de capacitaciones “ayudan a mejorar la calidad ambiental de las islas pobladas con respecto a este tipo de desechos, con los que aún tenemos problemas”. [...]

Ese año, el Programa Nacional de Gestión de Químicos recolectó 35 toneladas de desechos especiales y los trasladó a continente para su disposición final, como colchones, espumas de refrigeradores, plásticos rígidos, y aparatos eléctricos y electrónicos. [...]

[Swiss Info, 10 julio 2023](#)

*Image: Ecuadorec*

### **9. Gobernador Rosales firmó convenio marco para el diseño e implementación de planes de adaptación y mitigación del cambio climático en el Zulia (Venezuela)**

La tarde de este martes [11 julio], el Gobernador Manuel Rosales firmó, en la Sala de Situaciones de Palacio de Gobierno, el Convenio Marco de Cooperación entre el Gobierno del Zulia y Fomento Empresarial-ILDE para la Ejecución de Gestión e Investigación en Materia Ambiental y Cambio Climático en el estado Zulia.

En compañía de miembros del Gabinete de Gobierno, Rosales señaló que la firma de este acuerdo marco nos encamina hacia un proceso ambicioso y con grandes expectativas, por lo que significa el medio ambiente para la vida en el planeta.

El Gobernador del Estado Zulia, Manuel Rosales Guerrero, y el Dr. Carlos Altimari Gasperi, en representación de las empresas L-169-V Desarrollo Empresarial LTD CA, y el Instituto Latinoamericano de Desarrollo Empresarial, empresas denominadas conjuntamente como Business Development - ILDE, suscribió el convenio y decidió establecer el



“Convenio de Cooperación para el Desarrollo y Ejecución de la Gestión e Investigación en Materia de Cambio Climático”, con el fin de contribuir a la lucha contra este fenómeno que altera el equilibrio de la naturaleza.

El acuerdo suscrito prevé hacer uso de los artículos presentes en la Constitución de la República, mediante los cuales se establece proteger, conservar y mantener el medio ambiente, el clima, la capa de ozono, el aire, el agua, el suelo, las costas y las especies vivas. Contando con las estructuras orgánico-administrativas con las que cuentan las instituciones, para colaborar en la mitigación climática. [...]

[ES Euro News, 12 julio 2023](#)

Image: ES Euro News

## ASIA AND THE PACIFIC

### 10. Cooling the Heat: Can India Lead the World in Green Cooling Innovation



In recent months, India has broken several temperature records, recording its hottest February in 120 years. Heatwaves have devastating impacts on the health, economy, and environment of the nation, causing deaths, illnesses, crop failures, power outages, and water shortages. They also worsen air pollution, which is already a major public health crisis in India.

Heat stress is a serious threat to human health and well-being, especially for the poor and marginalized populations who lack access to cooling infrastructure, green spaces, and adequate housing. [According to the World Bank, heat waves affected over 1 billion people in India and Pakistan in 2020, exposing the region's acute vulnerabilities to rising temperatures and frequency, duration, and intensity of extreme heat events<sup>1</sup>](#). Moreover, heat stress can reduce the labor capacity and productivity of workers, especially in outdoor and manual occupations that are prevalent among the poor. By 2030, lost labor due to rising heat and humidity could risk up to 4.5% of India's GDP – approximately USD 150-250 billion. [Another study found that low-income households in rural and urban South Asia experience higher indoor temperatures than outdoor temperatures, due to poor housing quality and lack of ventilation](#). These findings suggest that heat stress can exacerbate poverty and inequality, both within and across countries, and undermine the efforts to achieve sustainable development for all.

The problem of heat is particularly acute in urban areas, where the urban heat island (UHI) effect makes cities much hotter than their surroundings. The UHI effect is caused by the

replacement of natural vegetation with concrete and asphalt, and the emission of waste heat from vehicles, industries, and air conditioners. The UHI effect also creates thermal inequities within cities, as the poor and marginalized suffer more from the lack of cooling infrastructure, green spaces, and adequate housing.

The World Bank's recent policy brief titled "Urban Heat in South Asia: Integrating People and Place in Adapting to Rising Temperatures" offers a comprehensive analysis of the urban heat challenge in India and its neighboring countries. It provides a conceptual framework and three specific recommendations for enhancing urban heat resilience in the region. These include gathering more data and research on urban microclimates and heat-vulnerable populations, integrating social and spatial factors in planning and development processes, and embedding urban heat resilience in building codes, zoning, and land-use regulations.

India must urgently address its urban heat challenge not only as a climate challenge but also as a development challenge. It poses a threat to the country's economic growth, social progress, and environmental sustainability, as well as exposing deep inequalities and injustices in our cities. Immediate action is needed to make our cities cooler, greener, and more inclusive for all.

Sustainable cooling solutions in India will not only benefit the people and the planet, but also create a huge economic opportunity for the country. [According to a recent report by the World Bank, India can generate a whopping \\$1.6 trillion of investment by 2040 by adopting green cooling technologies and practices](#)<sup>1</sup>. These include improving energy efficiency of cooling appliances, enhancing building design and construction, expanding renewable energy sources, and phasing down high-GWP refrigerants. [By implementing these measures, India can also reduce its annual greenhouse gas emissions by 213 metric tonnes of carbon dioxide equivalent by 2040](#)<sup>2</sup>, contributing significantly to the global climate goals. As a signatory of the Kigali Amendment to the Montreal Protocol and the Paris Agreement, India has shown its commitment to addressing the challenge of cooling in a climate-friendly manner. [The India Cooling Action Plan \(ICAP\), launched in 2019, is a visionary document that sets forth five ambitious goals and 100 concrete actions to achieve sustainable and equitable cooling for all](#). By pursuing these goals, India can not only protect its people from the deadly impacts of heat waves, but also unlock its economic potential and leadership in the global cooling market.

To achieve its cooling goals, India must invest in three major sectors: building construction, cold chains, and refrigerants. This requires adopting climate-responsive cooling techniques in affordable housing, district cooling systems in urban areas, pre-cooling and refrigerated transport in cold chains, and alternative refrigerants with lower global warming potential. These are proven technologies and best practices from around the world, and India has the potential to become a global leader and a hub for green cooling manufacturing and innovation. However, it will require concerted action from all stakeholders, including government, industry, civil society, and consumers.

The government must create an enabling policy and regulatory environment, provide incentives and financing mechanisms, promote awareness and capacity building, and monitor and evaluate progress. The industry must invest in research and development, adopt quality standards and labels, and scale up the production and distribution of energy-efficient cooling products and services. Civil society must advocate for sustainable cooling

as a public good, mobilize consumer demand and behavior change, and ensure that the benefits of cooling reach the poor and vulnerable.

[The World Bank, 11 July 2023, By Abhas K. Jha](#)

Image: The World Bank Website

## 11. Developing a Global Nitrous Oxide Reduction Policy for A Food-Secure Future

### Abstract

Multilateral approaches to nitrogen pollution are generating synergies between climate change and food security and presenting opportunities to reduce nitrous oxide (N<sub>2</sub>O) globally.

N<sub>2</sub>O is the most abundant ozone-depleting substance not yet regulated by the Montreal Protocol and a powerful greenhouse gas. Failure to reduce emissions will delay ozone layer recovery and worsen the climate crisis.

While cost-effective mitigation technologies to reduce N<sub>2</sub>O emissions are available, policies and incentives to encourage the uptake of such measures are lacking.

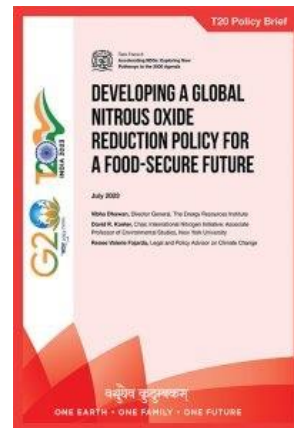
The G20, whose membership includes the world's largest food exporters and fertiliser consumers, is positioned to advance N<sub>2</sub>O mitigation by supporting coordinated multilateral action.

G20 leadership on N<sub>2</sub>O can support food security by preventing drastic impacts of climate change on food production and safeguarding the ozone layer, which protects agriculture and biodiversity from harmful ultra-violet B radiation. It can also support the achievement of countries' net-zero climate goals and nationally determined contributions.

**Attribution:** Vibha Dhawan, David R. Kanter and Renee Valerie Fajardo, "Developing a Global Nitrous Oxide Reduction Policy for A Food-Secure Future," T20 Policy Brief, July 2023.

[Observer Research Foundation \(ORF\), 7 July 2023](#)

Image: ORF Website



## 12. Vietnam, WB enhance partnership in climate change response for green growth

Minister of Natural Resources and Environment Dang Quoc Khanh has hailed the World Bank (WB)'s effective cooperation with Vietnam, especially in climate change response, green growth, and environmental protection.



Hanoi (VNA) – Minister of Natural Resources and Environment Dang Quoc Khanh has hailed the World Bank (WB)'s effective cooperation with Vietnam, especially in climate change response, green growth, and environmental protection.

At a working session in Hanoi on July 10 with Anna Wellenstein, Director for Sustainable Development in East Asia and the Pacific, and Global Director for Environment, Natural Resources, and Blue Economy at the WB, Khanh informed that on June 30, the Ministry of Natural Resources and Environment approved a project on the implementation of the carbon market in Vietnam and assigned its Department of Climate Change to work closely with the WB, ministries and agencies concerned on the project. [...]

Regarding the second stage of the Hydrochlorofluorocarbon (HCFC) phase-out project under the Montreal Protocol, he affirmed Vietnam's strong commitment to phasing out ozone-depleting substances. To launch the subsequent project titled "Sustainable Management of Chemicals Regulated under the Montreal Protocol", the minister tasked the Climate Change Department with working with the WB on the prospects and approval of the project. [...]

[Vietnam News Agency \(VNA\), 10 July 2023](#)

*Image: VNA Website*

**NORTH AMERICA**

### **13. Biden-Harris Administration Takes Latest Step in National Phasedown of Climate-damaging Hydrofluorocarbons**

Final rule will implement 40% reduction starting in 2024 while advancing U.S. manufacturing and innovation.

WASHINGTON – Today [11 July], the U.S. Environmental Protection Agency (EPA) announced the latest action to phase down the use of climate super-pollutant hydrofluorocarbons (HFCs), issuing a final rule to implement a 40% reduction below historic levels from 2024 through 2028. The rule aligns with the bipartisan American Innovation and Manufacturing (AIM) Act's goals to

reduce the production and consumption of these climate-damaging chemicals by 85% by 2036 and help avoid up to 0.5 °C of global warming by 2100.

The final rule builds on the success of the 10% phasedown step implemented for 2022 and 2023, by establishing a similar allowance methodology to provide regulatory certainty to industry and stakeholders, ensuring the most efficient implementation under the ongoing phasedown.

"This rulemaking is a critical next step in the Biden-Harris Administration's ambitious plans to phase down climate super-pollutants and ensure the United States leads the way as countries around the world implement the Kigali Amendment," said Joe Goffman, Principal Deputy Assistant Administrator of EPA's Office of Air and Radiation. "The U.S. HFC phasedown program, bolstered by domestic innovation to develop alternative chemicals and equipment, is paving the way for the United States to tackle climate change and strengthen global competitiveness."

"President Biden has brought together a broad coalition of American manufacturers to work on next-generation technologies across refrigeration, HVAC systems, and more – helping us cool without contributing more to global warming," said Ali Zaidi, White House National Climate Advisor. "With today's final rule, this Administration is continuing to deliver win-wins for climate action and U.S. manufacturing competitiveness while ensuring that American workers reap the benefits of a growing global market for HFC alternatives."

"As an original co-author of the bipartisan AIM Act, I applaud this action by EPA, which moves us closer to our goal of an 85 percent reduction in HFCs by 2036," said U.S. Senator Tom Carper (Del.), Chairman of the Senate Environment and Public Works Committee. "By phasing down the use of these super pollutants, we can both address climate change and support domestic manufacturing – a win-win. I commend the Biden-Harris Administration for their work to ensure that our nation remains a global leader in the fight against climate change and production of the next generation of refrigerants."

"Phasing down hydrofluorocarbons is a critical component of our national climate action strategy," Congressman Paul Tonko said. "That's why I was proud to help lead the bipartisan AIM Act to seize this powerful opportunity to spur economic growth, protect consumers, and address these climate super pollutants. I applaud the Biden



Administration's latest action to keep this program on track by providing HFC producers and users the certainty they need to navigate this next stage of the phasedown. And I encourage additional steps under the law to further position U.S. manufacturers as the worldwide leaders in the clean energy economy of the future."

"The Alliance appreciates the prompt and timely completion of the HFC allowance rule for the 2024 through 2028 period," said Kevin Fay, Executive Director of the Alliance for Responsible Atmospheric Policy, "as this allows continued US leadership in the efficient global phasedown of HFCs and smooths the transition to low-global warming potential chemicals and user technologies here and around the globe. The industry is appreciative of the attention and support provided by the EPA and the Biden Administration in this cooperative effort."

"This latest allocation rule is a critical step in the implementation of the AIM Act schedule for phasing down hydrofluorocarbon refrigerants," said AHRI President & CEO Stephen Yurek. "Our industry appreciates the work of the EPA and the timely issuance of this rule, as we prepare for the next HFC reduction step-down next January."

"This demonstrates EPA's commitment to stay on track to deliver on the Kigali Amendment goals and protect our planet from destructive super pollutants," said Avipsa Mahapatra, Climate Campaign Lead at the Environmental Investigation Agency. "The U.S. is demonstrating leadership not just at home but also in international discussions at the Montreal Protocol to prevent illegal trade and unnecessary emissions, through robust implementation and enforcement of the HFC phasedown."

The United States began this historic phasedown on January 1, 2022, with a reduction of HFC production and imports to 10% below historic baseline levels. Since then, allowances are needed to import and produce HFCs. Starting in 2024 the phasedown will be 40% below historic levels, a significant decrease in the number of available production and consumption allowances compared to previous years. HFC allowances for calendar year 2024 will be allocated by September 29, 2023. The phasedown schedule under this program is consistent with the schedule laid out in the Kigali Amendment to the Montreal Protocol, which the United States ratified in October 2022.

In addition to setting up an allowance allocation program, the HFC Phasedown Program has established robust enforcement mechanisms to ensure a level playing field for U.S. companies complying with the phasedown requirements. Since January 2022, the Interagency Task Force on Illegal HFC Trade, co-led by EPA and the Department of Homeland Security, has prevented illegal HFC shipments equivalent to more than 1 million metric tons of carbon dioxide (CO<sub>2</sub>) at the border, which is equivalent to the CO<sub>2</sub> emissions from over 206,000 homes' electricity use for one year.

EPA also applies administrative consequences, such as revocation and retirement of allowances, for noncompliance that can be in addition to any civil or criminal enforcement action. EPA has finalized administrative consequences retiring more than 6.5 million metric tons of carbon dioxide equivalent (CO<sub>2</sub>e) for calendar years 2022 and 2023 for companies that misreported data or imported HFCs without the requisite number of allowances.

EPA is planning two additional regulatory actions under the AIM Act in 2023. The first is a final rule placing restrictions on the use of HFCs in certain sectors to facilitate sector-

based transitions to alternative chemicals, and the second is a proposed rule establishing certain requirements for the management of HFCs and HFC substitutes in equipment, such as air conditioners.

HFCs are a class of potent greenhouse gases commonly used in refrigeration and air conditioning, aerosols, and foam products. Their climate impact can be hundreds to thousands of times stronger than the same amount of carbon dioxide.

[U.S. Environmental Protection Agency \(USEPA\), 11 July 2023](#)

*Image: USEPA website*

#### **14. UT researchers develop smart fertilizing system to reduce pollution**

University of Texas (UT) researchers developed a more sustainable farming system that reduces fertilizer pollution and creates higher crop yields.

Current farming systems rely heavily on nitrogen fertilizers. According to the [study](#) published on June 20, nitrogen waste from these fertilizers often pollutes groundwater and contributes to the ozone layer's depletion. The new method uses a copper-based hydrogel-which detects the amount of nitrogen in the soil and turns it into fertilizer-to convert nitrogen pollution into ammonia. [...]



[The Daily Texan, Official newspaper of The University of Texas at Austin, 6 July 2023, By Rylie Lillibridge](#)

*Image: UT website - Maya K*

## EUROPE & CENTRAL ASIA

#### **15. Empresarios gallegos y portugueses, al banquillo acusados de traficar con un gas refrigerante prohibido**

La Fiscalía pide para los cuatro, penas de más de 2 años de cárcel y multas de hasta 72.000 euros.

Varios empresarios gallegos y portugueses se sientan esta semana en el banquillo de la sala viguesa de la Audiencia Provincial de





Pontevedra acusados de traficar con un gas refrigerante prohibido por destruir la capa de ozono.

El juicio se celebrará el próximo martes a las 09.45 horas. La Fiscalía pide penas de más de 2 años de cárcel, así como multas que van de 54.000 a 72.000 euros, para varios empresarios y sus sociedades que están acusados de comerciar con gases refrigerantes prohibidos.

Según el escrito de acusación del ministerio público, uno de los acusados es responsable de una empresa afincada en la ciudad olívica y que, al menos desde 2010, vendía gas clorodifluorometano, conocido por su nombre comercial como gas R22, que se utiliza para refrigeración industrial y de buques.

### **La normativa europea**

La venta de este gas está prohibida por normativa europea debido a que se trata de un producto que destruye la capa de ozono, aunque se contempla la excepción de que se pueda importar, reenvasar y exportar a otros países no comunitarios. También se permite vender en territorio de la UE si previamente se regenera.

La Fiscalía sostiene que esta empresa y su responsable vendieron el gas sin regenerar, a sabiendas de que estaba prohibido, a otras empresas, que también están acusadas en este procedimiento junto a sus responsables, y a buques.

El ministerio público los considera responsables de un delito de tráfico ilegal de sustancia destructora del ozono, y solicita para cada de las cuatro personas acusadas en esta causa (dos de ellas con documento portugués) la pena de 2 años y 3 meses de cárcel, multa de 66.000 euros y 9 años de inhabilitación para comerciar con gases refrigerantes.

Para la empresa gallega que vendía el gas pide multa de 72.000 euros y la prohibición de realizar operaciones de comercio de gases refrigerantes durante 2 años; para otra empresa gallega que compraba el producto y lo distribuía pide multa de 54.000 euros, la misma multa que para otra empresa portuguesa que adquirió el gas.

### **[Faro de Vigo, 9 julio 2023](#)**

*Image: Edificio de la Ciudad de la Justicia de Vigo, donde tendrá lugar el juicio / MARTA G. BREA*

### **See also >>>**

- North Macedonia: [Customs seize 13.5t of refrigerant in illegal cylinders](#), CoolingPost, 12 July 2023
- Greece: [Illegal HFC traders fined €200,000](#), CoolingPost, 15 July 2023

**Heat pumps - action plan to accelerate roll-out across the EU**-The use of efficient heat pumps in buildings, industry & local heat networks is key for cutting greenhouse gases and achieving the Green Deal & REPowerEU targets. The action plan on accelerating the heat pump market and deployment sets out 4 strands of action:

- partnership between the Commission, EU countries and the sector (including R&I)
- communication to all interest groups & a skills partnership for rolling out heat pumps
- legislation (ecodesign & energy labelling)
- accessible financing.

**Consultation period 07 June 2023 - 30 August 2023** (midnight Brussels time) [Go to consultation >>>](#)

**The Commission would like to hear your views.** This public consultation is open. Your input will be taken into account as we further develop and fine-tune this initiative. We will summarise the input we receive in a synopsis report, explaining how we have taken it into account. Feedback received will be published on this site and therefore must adhere to the [feedback rules](#).

**Refrigeration  
Industry**  
online magazine  
and directory

**Heat pumps - action plan to  
accelerate roll-out across  
the EU**



To be organised by the French Association of Refrigeration (AFF) under the theme "[Towards Efficient, Controlled and Smart Refrigeration](#)", the **26<sup>th</sup> IIR International Congress of Refrigeration** will be held in Paris, France, 21-25 August 2023.

This international event will bring together scientific and technical experts in all fields of refrigeration from across the globe, to provide perspectives on the future of the industry in line with sustainable development. [Learn more >>>](#)

**FEATURED**

**Summary of the 34<sup>th</sup> Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer (MOP34), 31 October – 4 November 2022 | Montreal, Canada**

- Read/Download the [full report](#)
- pre/post documents, United Nations Environment Programme (UNEP), Ozone Secretariat [MOP-34](#)
- [Daily highlights](#) Earth Negotiations Bulletin-International Institute for Sustainable Development (IISD) / [Presentations and statements](#) / [Side events](#)



*Image: ENB-IISD website*

**Overview for the meetings of the ozone treaties** - Click [here](#) for upcoming and past Montreal Protocol Meetings dates and venues.

**World Ozone Day 2023 theme announced: Montreal Protocol: fixing the ozone layer and reducing climate change** - On World Ozone Day, we celebrate the achievements of the Montreal Protocol on Substances that Deplete the Ozone Layer in fixing the ozone layer and reducing climate change. The theme for the 2023 International Day for the Preservation of the Ozone Layer, to be marked on 16 September, is **Montreal Protocol: fixing the ozone layer and reducing climate change**. This reiterates the recent finding by the Scientific Assessment Panel of the positive impact the Montreal Protocol has on climate change, that ozone recovery is on track and how climate challenges can be supported through the Kigali Amendment.



The theme and other related materials available [here](#) in the six UN official languages.

**New gaming technology to create environment simulation game for teenagers**-The UN Environment Programme's (UNEP) Ozone Secretariat today launched a simulator game and avatar using the latest software technology. [Apollo's Edition](#) is the latest addition to the [Reset Earth education platform](#). Targeting 13-18-year-olds, the free online education material developed provides educators with resources to teach students the importance of environmental protection.



**Online introductory course 'International legal framework on ozone layer protection'** - Designed for government representatives and national stakeholders new to the Vienna Convention and Montreal Protocol, students of environmental law, and anyone interested in learning about the ozone treaties, the [online course](#) launched by the Ozone Secretariat aims to provide an introduction to the international legal framework on ozone layer protection.



[United Nations Environment Programme \(UNEP\), Ozone Secretariat](#)

### **Free teaching kits on ozone layer and environmental protection**

- New free online teacher toolkits and lesson plans based on the success of UNEP's Ozone Secretariat's [Reset Earth](#) animation and video game
- Targeting Tweens by adopting animation and gamification to create innovative online lessons to raise awareness on ozone layer and environmental protection
- Available online in digital and print format for universal access



Read/download >>> [Ozone Secretariat's education platform](#)

### **The UN Environment Assessment Panels**

The Assessment Panels have been vital components of ozone protection since the Montreal Protocol was first established. They support parties with scientific, technological, and financial information in order to reach decisions about ozone layer protection and they play a critical role in ensuring the Protocol achieves its mandate. The Assessment Panels were first agreed in 1988 to assess various direct and indirect impacts on the ozone layer. The original three panels are:

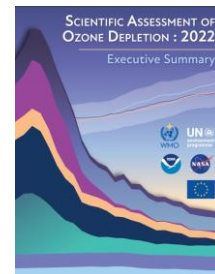
- [The Technology and Economic Assessment Panel](#)
- [The Scientific Assessment Panel](#)
- [The Environmental Effects Assessment Panel](#)

In the past there were 4 main panels. The Panels for Technology and Economic Assessments were merged in 1990 into one Panel, now called the Technology and Economic Assessment Panel.

**Why are the three current panels important to ozone layer protection?** Each carries out assessment in its respective field. Every four years, the key findings of all panels are consolidated in a synthesis report. [Learn more >>>](#)

**Scientific Assessment of Ozone Depletion: 2022 - [Executive Summary](#)**

[United Nations Environment Programme \(UNEP\), Ozone Secretariat](#)



### **The Multilateral Fund for the Implementation of the Montreal Protocol**

The Fund is dedicated to reversing the deterioration of the Earth's ozone layer. It was established by a decision of the Second Meeting of the Parties to the Montreal Protocol (London, June 1990) and began its operation in 1991. The main objective of the Fund is to assist developing country parties to the Montreal Protocol whose annual level of consumption of the ozone depleting substances (ODS) chlorofluorocarbons (CFCs) and halons is less than 0.3 kilograms per capita to comply with the control measures of the Protocol. Currently, 147 of the 197 Parties to the Montreal Protocol meet these criteria. They are referred to as Article 5 countries.

The Multilateral Fund is managed by an Executive Committee with equal membership from developed and developing countries. Since the inception of the Fund, the Executive Committee has held 91 meetings. The Fund Secretariat, located in Montreal, assists the Executive Committee in its tasks. Projects and activities supported by the Fund are implemented by four international implementing agencies and a few bilateral agencies.

Last 16 July 2022, following the adoption of interim budgets for the Multilateral Fund due to the Covid-19 pandemic, the Fifth Extraordinary Meeting of the Parties to the Montreal Protocol (5<sup>th</sup> ExMOP) decided on the replenishment of the Multilateral Fund for the triennium 2021-2023. The Parties agreed on a budget of US \$540 million for the triennium.

As of 5 December 2022, the contributions received by the Multilateral Fund from developed countries, or non-Article 5 countries, totalled over US\$ 5.02 billion. The Fund has also received additional voluntary contributions amounting to US \$25.5 million from a group of donor countries to finance fast-start activities for the implementation of the HFC phase-down.

To facilitate phase-out by Article 5 countries, the Executive Committee has approved 144 country programmes, 144 HCFC phase-out management plans and has funded the establishment and the operating costs of ozone offices in 145 Article 5 countries.

**Latest News and Announcement:**

- [NEW Updated guides and submission forms for the preparation of project proposals](#)
- [Report of the Ninety-second Meeting of the Executive Committee, 13 June 2023](#)
- [Executive Committee Primer – 2023](#), An introduction to the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol, 24/4/2023
- [Policies, Procedures, Guidelines and Criteria of the Multilateral Fund \(Dec 2022\)](#), 3/30/2023
- [Framework of activities for sustainability supported by the Multilateral Fund](#), 3/22/2023

**Upcoming events:**

- The 93<sup>rd</sup> meeting is scheduled for 11 to 15 December 2023, in Montreal, Canada
- >>> Click [here](#) for the Executive Committee upcoming and past Meetings and related documents.



[OzonAction Compliance Assistance Programme](#) produces and outreaches a wide variety of information and capacity building materials and tools that support the implementation of the Montreal Protocol programs and assist Article-5 countries in meeting the compliance targets. These include publications, technology briefs and factsheets, mobile applications, videos, e-Learning, modelling, and database programs and special educational or certification programs.

**The section below features several of our most recent products.**

Visit [OzonAction website](#) for more information, discover the entire range of products.

*Images in this section are by OzonAction*

[Every Action Counts: Kigali Amendment - UNEP 2022](#) - This brochure targets the general public and explains in a simplified manner what the Montreal Protocol and its Kigali Amendment signify. It includes some actions that everybody can do to support the Kigali Amendment. It also covers the relationship between the Kigali Amendment and Sustainable Development Goals. It introduces some examples of successful communication campaigns on the Kigali Amendment. [English](#) / [Spanish](#)



[Gender Mainstreaming in the Montreal Protocol: Experiences in Latin America and the Caribbean](#) -Taking into account that women and girls constitute half of the world’s population and, therefore, represent half of the potential and innovation necessary to face the “triple planetary crisis” — climate change, nature and biodiversity loss, pollution and waste —, positioning people and the planet as central pillars of the transformation necessary to overcome it, and considering the guiding principles and the scopes of action of the Operational Policy on Gender Mainstreaming of the Multilateral Fund, the United Nations Environment Programme (Latin America and the Caribbean Office). [English](#) / [Spanish](#)



**Refrigeration, Air-Conditioning, and Heat Pumps (RACHP) Associations & Organizations:** This Knowledge Map provides a global directory of RACHP associations, societies, and organisations around the world. These are key stakeholders for ensuring safe and efficient refrigerant transitions.



**Local Technical & Vocational Education and Training (TVET):** This Knowledge Map provides a global directory of TVET entities and centres around the world. These are the strategic partners for conducting and promoting training and certification programmes related to the refrigeration servicing sector.

Click [HERE](#) to access the OzonAction Knowledge Maps tool

Click [HERE](#) to download the OzonAction Knowledge Maps tool flyer

### Gas Card Tool: Web-based Visual Printable Cards of Refrigerant Gases

**Content of Gas Cards** - Each Gas Card is printable (in PDF or image format) and includes the following information about each substance/gas: a) General Characteristics (Chemical name, formula and type, ASHRAE designation, Trade names, Harmonized System (HS) codes, Chemical Abstract Service (CAS), United Nations (UN) numbers, Blend/ mixture components, Montreal Protocol Annex and Control measures, main usage, etc.) b) Gas Performance—Radar Chart (in terms of: Ozone depleting potential-ODP, Global warming potential- GWP, Toxicity Class & Flammability Class) c) Environmental and Safety Impact, and Safety Impact (with visualization of Toxicity & Flammability Class, Hazardous Symbols).



**More Information** - The Gas Card web based tool is part of UNEP OzonAction's portfolio of activities and tools to assist various stakeholders in developing countries, including customs officers and technicians, to achieve and maintain compliance with the Montreal Protocol on Substances that Deplete the Ozone Layer. In the left navigation bar of the Gas Card tool web page, you will find a list of commonly used HFCs and HFC Blends in different sectors. \*

### Using the Gas Card web-based tool

- The Gas Card tool is available online on the [OzonAction website](#)
- Read the full [2021 annual iPIC report](#)
- See the [flyer](#) introducing the new iPIC platform

\* Based on the Overall Analysis of the Results of the Survey of ODS Alternatives Report (conducted in 119 countries from 2012 to 2015)



**HCFC Quota and Licence Tracker** - a new desktop application to assist with HCFC licences and quotas - National Ozone Officers have the great responsibility of managing the allocation and monitoring of quotas for substances controlled under the Montreal Protocol. This process can be complex with many

importers, especially if the country imports a range of different hydrochlorofluorocarbons (HCFCs) and mixtures containing HCFCs. To address this challenge, OzonAction developed a new desktop application that helps Ozone Officers with the tasks of planning, calculating, monitoring and managing consumption quotas and licences. It can be used on a daily basis to track and manage the current year's quota allocations for different importers, or for future planning by trying different scenarios that adjust the type of substances imported, their quantity, or the number of importers. The HCFC Quota and Licence Tracker allows Ozone Officers to see the effect of such scenarios on the national HCFC consumption and helps ensure that the quotas stay within agreed HCFC Phase-out Management Plan (HPMP) targets. For countries that have ratified the Kigali Amendment, in the future OzonAction will extend the tracker to include hydrofluorocarbons (HFCs) once countries begin designing their quota systems for those controlled substances. **Access the:**

- [HCFC Quota tracker app](#)
- [Flyer for more information on the tracker](#)
- [Short video tutorial on the OzonAction YouTube Channel](#)



**[GWP-ODP Calculator Application](#) - Updated- “Quickly, efficiently and accurately convert between values in metric tonnes, ODP tonnes and CO<sub>2</sub>-equivalent tonnes”**

Data are extremely important for the Montreal Protocol community, and the data reporting formats for both A7 and CP have changed recently, to a large degree triggered by the Kigali Amendment. HFCs, blends, CO<sub>2</sub>-equivalent values, etc, now have to be addressed much more frequently by Ozone Officers during their daily work. Sometimes the terminology and values are complex and can be confusing, and it helps to have it all the official facts and figures in one place. Conversion formulas need to be applied to calculate CO<sub>2</sub>-eq values from both GWP and metric tonne values. This free app from OzonAction is a practical tool for Ozone Officers to help demystify some of this process and put frequently needed information at their fingertips.



**What's new in the app:**

- An updated more user-friendly interface
- Multilingual interface: English, French and Spanish
- A new **Kigali Amendment mode** - in this mode the GWP values used to calculate the refrigerant blends/mixtures only include GWP contributions from components that are controlled HFCs
- Latest updated ODP and GWP values from the recent reports from the Montreal Protocol technology and scientific expert panels as well as the Intergovernmental Panel on Climate Change (IPCC) reports
- References added for sources of all values
- New refrigerant mixtures (with ASHRAE -approved refrigerant designations)

If you already have the application installed on your device, be sure to update to benefit from the new features. The app can be viewed in English, French or Spanish.



Smartphone Application: Just search for “GWP-ODP Calculator” or UNEP in the Google Play store or use the QR code – free to download! If you already have the application installed on your device, be sure to update to benefit from the new features.



Desktop Application: GWP-ODP Calculator is also available online on the [OzonAction website](#)



Watch the new short introductory tutorial **video** on the GWP-ODP Calculator - available now on [YouTube](#)

>>> [Read/download the flyer](#)

### Updated OzonAction "WhatGas?" Mobile App

The OzonAction 'WhatGas?' application is an information and identification tool for refrigerant gases: ozone depleting substances (ODS), HFCs and other alternatives. It is intended to provide some stakeholders, including Montreal Protocol National Ozone Officers, customs officers, and refrigeration and air-conditioning technicians with a modern, easy-to-use tool that can be accessed via mobile devices or the OzonAction website to facilitate work in the field, when dealing with or inspecting ODS and alternatives, and as a useful reference tool.



This latest release includes the 2022 Harmonized System (HS) Codes for HFCs and blends, which facilitates the process of inspection and identification of controlled and alternative substances.

Scan the QR code to download the app (*currently available for Android devices only*). If you've already downloaded the app, to update visit the [Google Play Store](#)

[RAC Technician Videos](#) - Full length films! Two 'full length' videos for refrigeration and air-conditioning (RAC) sector servicing technicians: on 1) Techniques, Safety and Best Practice and 2) Flammable Refrigerant Safety.

The OzonAction Refrigeration and Air-Conditioning Technician Video Series consists of instructional videos on techniques, security and best practice and flammable refrigerant safety. They are intended to serve as a complementary training tool for RAC sector servicing technicians to help them revise and retain the skills they have acquired during hands-on training. The videos are not intended to replace structured formal technician training, but to supplement and provide some revision of tips and skills and to build on training already undertaken.



These videos are based on the successful UNEP OzonAction smartphone application, the RAC Technician Video Series app. This application has been downloaded on more than **86,000** devices since its launch.

Following many requests to make the videos more versatile and better suited to classroom and training settings, OzonAction has responded to this demand and produced two 'full-length' instructional videos.

You may wish to share this message and the flyer with:

- Your national/regional RAC associations
- Training or vocational institutes
- Master RAC trainers in your country
- Any other interested national stakeholders



You can watch these videos on the OzonAction YouTube Channel:

- [Techniques, Safety and Best Practice](#)

- [Flammable Refrigerant Safety](#)



The videos are also available for download by request from UNEP OzonAction:

[unep-ozonaction@un.org](mailto:unep-ozonaction@un.org)



If you prefer to access the video clips via the OzonAction smartphone application, just search for “RAC Technician Video Series” or UNEP in the Google Play Store and iTunes/App Store or scan the QR code – **Free to download!**

The flyer is available from the [OzonAction website](#).

[OzonAction's iPIC platform - Updated](#) Collaboration between China and Thailand using OzonAction's informal Prior Informed Consent (iPIC) system has resulted in the prevention of a huge consignment of ozone-depleting and climate damaging hydrochlorofluorocarbons (HCFCs). Those chemicals, which are primarily used as refrigerants for air conditioners and fridges, are controlled under the Montreal Protocol on Substances that Deplete the Ozone Layer and are being phased out by all countries according to a specific timeline.



[Women in the refrigeration and air-conditioning industry: Personal experiences and achievements](#)

The United Nations Environment Programme's (UNEP), OzonAction, in cooperation with UN Women, has compiled this booklet to raise awareness of the opportunities available to women and to highlight the particular experiences and examples of women working in the sector and to recognise their successes. All of the professionals presented in the booklet are pioneers. They are role models whose stories should inspire a new generation of young women to enter the weld and follow in their footsteps. **Read/download the [publication](#)**



As part of IIR and UNEP OzonAction's partnership, a set of Cold Chain Technology Briefs was released over the past few years, which includes in-depth summaries about the cold chain in different key sectors. They include descriptions of technology, refrigerant options and trends and conclude with prospects and challenges. They cover the main cold chain sub-sectors, i.e. [Production & Processing](#), [Cold Storage](#), [Transport Refrigeration](#), [Commercial & Domestic](#), and [Fishing Vessels](#). **Download the Cold Chain Technology brief in [English](#) | [French](#) | [Russian](#) | [Spanish](#)**



## PUBLICATIONS

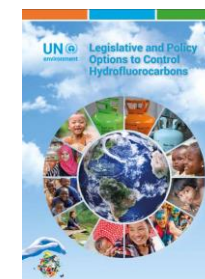
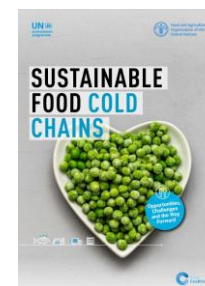
[Results of a Worldwide Survey about Women in Cooling Released by IIR and UNEP OzonAction](#) - Refrigeration, Air-Conditioning, and Heat-pumps

(RACHP) are crucial for our health, nutrition, comfort, and well-being. It is one of the sectors that crosscuts many of the UN sustainable development goals and can contribute significantly to safeguard the environment, advance welfare of humanity and support the growth of employment and economics worldwide. Women are highly under-represented in this sector as indicated by the fact that only 6% of the members of national refrigeration associations/organisations/institutions are women. In order to better understand the background, motivation, challenges, and opportunities faced by women working in RACHP a worldwide survey was undertaken by the International Institute of Refrigeration (IIR) and OzonAction of UN Environment Programme (UNEP) in cooperation with several partners. **Read/Download the Full Report**

[Sustainable Food Cold Chains: Opportunities, Challenges and the Way Forward](#)-This [UNEP-FAO] report explores how food cold chain development can become more sustainable and makes a series of important recommendations. These include governments and other cold chain stakeholders collaborating to adopt a systems approach and develop National Cooling Action Plans, backing plans with financing and targets, implementing and enforcing ambitious minimum efficiency standards. At a time when the international community must act to meet the Sustainable Development Goals, sustainable food cold chains can make an important difference.

[Legislative and Policy Options to Control Hydrofluorocarbons](#) - In order to follow and facilitate the HFC phase-down schedules contained in the Kigali Amendment, the Parties, including both developed and developing countries, will have to implement certain measures. This booklet contains a recommended set of legislative and policy options which the developing (Article 5) countries may wish to consider for implementation. It is intended to be a guide/tool for countries. [Read/download](#)

Latest issue of Centro Studi Galileo magazine, **Industria & Formazione**, n. [10-2022](#) (in Italian).



**Green Cooling in public procurement** How to advance the procurement of climate-friendly and energy-efficient cooling equipment in the public sector? Air conditioning in public buildings is often responsible for around 50% of total electricity consumption. Switching to climate-friendly cooling technologies ("Green Cooling") can reduce costs and energy consumption and improve the carbon footprint of public buildings. This study takes a closer look at the benefits of Green Cooling in the public sector and discusses current barriers and possible solutions. The information presented provides a solid basis to revise current procurement criteria for sustainable cooling systems in public buildings. **Read/Download the [study](#)**



E-Book on Process Safety Management (PSM) Training for Ammonia Refrigeration - a new e-book about the critical elements of a process safety management (PSM) training program for facilities operating an ammonia refrigeration system.

The e-book, titled "[7 Keys to a Compliant PSM Training Program for Ammonia Refrigeration](#)," outlines important questions a facility's program should address and questions that trained plant personnel should be able to answer. Topics covered include:

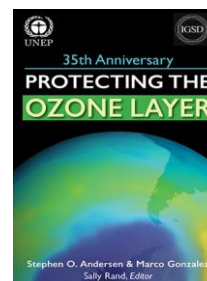
- Safety hazards and health considerations
- Emergency shutdown procedures
- Addressing deviations from system operating limits
- Risks and costs of non-compliance with regulatory standards

**Request free Download [here](#)**



**Protecting the Ozone Layer - 35<sup>th</sup> Anniversary Edition** - a new book celebrating the 35<sup>th</sup> Anniversary of the Montreal Protocol. **The electronic version (Kindle Edition) of the book has become [available for purchase \\$3.03 on Amazon](#).** The book highlights successes and documents innovation during the first 35 years and inspires new ambition to strengthen protection of stratospheric ozone and climate before Earth passes tipping points. The book tells the story of the Montreal Protocol, revealing a model of cooperation, collaboration, universal ratification, record of compliance with over 99 per cent of controlled ozone-depleting substances (ODSs) phased out, the ozone layer on the path to recovery, the 2007 Montreal Adjustment, and the 2016 Kigali Amendment moving the Montreal Protocol further into environmental protection. Unfinished business includes: HCFC phase out, ODS bank management, HFC phase down, uncontrolled ozone-depleting greenhouse gas nitrous oxide (N<sub>2</sub>O), feedstock exemptions for plastics production, and dumping of obsolete cooling appliances.

**[The book was released at 34<sup>th</sup> Meeting of the Parties to the Montreal Protocol on 31 October 2022.](#)**





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